Remarks

Applicant respectfully requests reconsideration of this application. Claims 2, 8, 9, 11, 22, 23 and 25 are pending. Claims 1, 3-7, 21 and 24 have been canceled. Applicant reserves the right to pursue the subject matter of the cancelled claims in a continuation application.

Claims 2 and 22 have been amended to incorporate the limitations of the base claim in accordance with the examiner's statement that these claims would be allowable if rewritten in independent form. In particular, the examiner indicated that the prior art does not suggest a reflective layer that comprises tantalum oxide. In this regard, claim 11 has been amended to specify that the electron-reflective layer is a tantalum oxide layer. Claims 8-9, 23 and 25 have been amended to correct their dependency in view of the cancellation of the associated independent claims.

Art Rejections - 35 U.S.C. § 103(a)

Claims 1, 3-9, 11, 21, 24 and 25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Fluke et al. (US 6,313,973; "Fluke") or Gill (US 6,271,997; "Gill") taken with either Kawawake et al. (US 201/0046110; "Kawawake") or Sakakima et al. (US 6,567,246; "Sakakima"). The rejection is considered moot in view of the cancellation of claims 1, 3-7, 21 and 24, and in further view of the foregoing amendments, as explained above. That is, remaining independent claims 2, 11, 22 and dependent claims 8, 9, 23 and 25 each specifically recite an electron-reflective layer comprising a tantalum oxide layer or film. There is no teaching or suggestion in the prior art of record of a tantalum oxide layer electron-reflective layer in a spin-valve magnetoresistive sensor structure.

In paragraph [0116] Kawawake teaches a metal reflective layer provided on the surface of an antiferromagnetic layer. When the antiferromagnetic layer is not in contact with the metal-reflective layer, the antiferromagnetic layer (e.g., 9-1 in Figure

5) is made of an insulating antiferromagnetic material, e.g., an oxide. However, Kawawake fails to teach or suggest the use of any material other than a metal as his reflective layer. Moreover, Kawawake discloses a structure (e.g., paragraph [0018]) in which the reflective layer is in contact with the magnetic layers. In contrast, the sensor structure of the claimed invention requires a non-magnetic back layer disposed adjacent to the free magnetic layer with an electron-reflective layer that adjoins the non-magnetic back layer on a side of the non-magnetic back layer opposite the free magnetic layer (see representative claim 22).

Sakakima teaches a magnetoresistance effect element in which an oxide non-magnetic film 6 having a good flatness is provided on the free layer so that electrons are mirror-reflected on the upper surface of the free layer 5. (See col. 9, lines 7-13). Sakakima emphasizes that the interface between the oxide non-magnetic film and the free layer must have good flatness characteristics (i.e., pits and protrusions of about 0.5 nm or less) in order to obtain sufficient reflection and thereby achieve a high MR ratio. Sakakima, however, lacks any disclosure or suggestion of an electron-reflective film comprising a tantalum oxide layer disposed adjacent a non-magnetic back layer on a side of the non-magnetic back layer opposite the free ferromagnetic layer.

Since each of the remaining claims includes the limitation of an electron-reflective film comprising a tantalum oxide layer disposed adjacent to the non-magnetic back layer on a side of the non-magnetic back layer opposite the free ferromagnetic layer, Applicant respectfully submits that the subject matter of all of the remaining claims is patentably distinguished over the combination of cited prior art references. That is, neither Kawawake nor Sakakima teach, disclose, or suggest a magnetoresistive sensor with the claimed structural feature of an electron-reflective film comprising a tantalum oxide layer or film disposed adjacent to the non-magnetic back layer on a side of the non-magnetic back layer opposite the free ferromagnetic

layer. Because the above structural feature is not disclosed in or suggested by any of the cited references, or their combination, it is respectfully submitted that the subject matter of remaining claims 2, 8, 9, 11, 22, 23 and 25 would not have been obvious to a person of ordinary skill in the magnetic recording arts at the time the invention was made in view of the prior art.

Applicant therefore respectfully submits that all remaining claims are now in condition for allowance.

Please charge any shortages and credit any overcharges to our Deposit Account No. 50-2060.

Respectfully submitted,
BURGESS & BEREZNAK, LLP

Dated: 12/23, 2004

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FIRST CLASS CERTIFICATE OF MAILING
(37 C.F.R. § 1.8(a))

I hereby certify that the foregoing **AMENDMENT AND RESPONSE** is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the M/S Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 12/23/04.

John Bereznak
Name of Person Mailing Correspondence

Signature

12/23/04
Date